

**IN THE UNITED STATES PATENTS AND  
TRADEMARKS OFFICE**

**APPLICANT:** Martin Melchiors Et Al.  
**SERIAL NO.:** 09/928,883  
**FILED:** August 13, 2001  
**FOR:** Aqueous Dispersions  
**Art Unit:** 1711  
**Examiner:** R. A. SERGENT

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**DECLARATION**

I, Martin Melchiors, residing at Leichlingen, D-41539, Germany, declare as follows:

- 1) that I have studied chemistry at the University of Aachen from 1987-1992;
- 2) that I received the degree of doctor rer. nat. at the University of Aachen in the year of 1995;
- 3) that since 1995 I am employed by Bayer AG, D-51368 Leverkusen, Germany;
- 4) that I am working in the research field of aqueous coating compositions since 1998 and that I am familiar with the subject matter of the above identified application;
- 5) that the following tests were carried out under my supervision and control:

## **I) Blocked aromatic polyisocyanate**

132 g of Desmodur® VL R20 (aromatic polyisocyanate based on diphenyl-methane-diisocyanate [MDI], Bayer AG), 106 g of N-methy-pyrrolidon were heated to 40°C. 115,4 g of 3,5-dimethyl pyrazole (DMP) were added in such a way, with stirring, that the temperature did not exceed 70°C. Stirring was then continued at 70°C until no more isocyanate could be detected by IR spectroscopy.

## **II) Aqueous dispersions of polyol containing urethane groups and blocked aromatic polyisocyanate (according to the invention, see example D5)**

An aqueous dispersion of a polyol containing urethane groups and blocked polyisocyanate was prepared following the procedure of example D5 of the invention with the exception that 277.5 g of the blocked aromatic polyisocyanate I) were used instead of 307 g blocked polyisocyanate B1) of the invention.

The dispersion obtained had a solids content of 43.7%, a co-solvent content of 8.7%, a viscosity of 330 mPas and an average particle size of 84 nm. The acid value was 25.0 mg KOH/g, the OH content 2.6% (in each case based on 100% solids content).

## **III) Aqueous dispersions of polyol containing urethane groups and blocked polyisocyanate (according to the invention, see example D1)**

An aqueous dispersion of a polyol containing urethane groups and blocked polyisocyanate was prepared following the procedure of example D1 of the invention with the exception that Desmophen VP LS 2236 (linear, aliphatic polycarbonate polyester, hydroxyl value 112 mg KOH/g) was substituted by the same amount of PoylTHF® 1000 (linear, aliphatic polyether, hydroxyl value 112 mg KOH/g, supplied by BASF AG, Germany).

An approximately 35,1 % solids dispersion was obtained having an organic solvent content of approximately 8.3 %. The average particle size was 74 nm.

## **A) Preparation of clear coats**

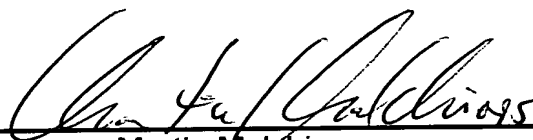
150.0 parts by wt. of the dispersion according to examples were formulated to a waterborne clear coat with 1.2 parts by wt. of a commercial flow additive (Additol® XW 395, Vianova Resins), 1.2 parts by wt. of a commercial wetting agent (Surfynol® 104, 50 %), 3,0 parts by wt. of 10 % aqueous solution of NMP and 19.6 parts by wt. of dist. water, applied to glass panels (wet film thickness 120 µm), allowed to dry for 10 min at room temperature and then stoved for 30 min at 140 °C and 160°C. Table 1 shows the results of the paint tests.

Table 1:

Example	II)	III)
Drying 10 min RT +30 min 140°C		
Appearance of paint film	satisf.	satisf.
Pendulum hardness	118	19
Solvent insistance	3344	4444
Drying 10 min RT +30 min. 160°C		
Appearance of paint film	satisf.	satisf.
Pendulum hardness	130	18
Solvent resistance	2344	4344

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed at Leverkusen, Germany, this <sup>14</sup> day of November 2005



Martin Melchior